UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/710,772	08/02/2004	Arthur G. Rodgers	04-0558	4771

24319 7590 12/11/2007

LSI CORPORATION
1621 BARBER LANE
MS: D-106
MILPITAS, CA 95035

EXAMINER	
DWIVEDI, MAHESH H	
ART UNIT	**PAPER NUMBER**
2168	

MAIL DATE	DELIVERY MODE
12/11/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents

United States Patent and Trademark Office

P.O. Box 1450

Alexandria, VA 22313-1450

www.uspto.gov

BEFORE THE BOARD OF PATENT APPEALS

AND INTERFERENCES

Application Number: 10/710,772

Filing Date: August 02, 2004

Appellant(s): RODGERS ET AL.

Michael R. Nichols

For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 09/10/2007 appealing from the Office action mailed 02/15/2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,907,001	Nakayama et al.	06/14/2005
6,842,423	Erimli et al.	01/11/2005
6,959,002	Wynne et al.	11/25/2005

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 1-17, and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Nakayama et al.** (U.S. Patent 6,907,001) and in view of **Erimli et al.** (U.S. Patent 6,842,423).

3. Regarding claim 1, **Nakayama** teaches a method comprising:

A) receiving a plurality of queue items at an input queue (Column 4, lines 51-62, Figure 1);

B) wherein the input queue feeds a plurality of output queues that feed one or more output ports (Column 4, lines 32-40, Figure 1);

C) determining whether a particular one of a plurality of output queues contains a number of queue items that meets or exceeds a pre-determined amount (Column 4, lines 51-67-Column 5, lines 1-11); and

D) in response to a determination that the particular one of the plurality of output queues contains a number of queue items that meets or exceeds the predetermined amount, preventing any queue items that have a same corresponding output port as the particular one of the plurality of output queues and that have a queue item priority greater than or equal to the queue priority of the particular one of the plurality of output queues from exiting the input queue (Column 4, lines 63-67-Column 5, lines 1-11).

The examiner notes that **Nakayama** teaches **"receiving a plurality of queue items at an input queue"** as "a plurality of packets destined for the same output port are input simultaneously partially over a time base from a plurality of input lines" (Column 4, lines 52-54). The examiner further notes that **Nakayama** teaches **"wherein the input queue feeds a plurality of output queues that feed one or more output ports"** as "sending the cells to switch input ports LI (LI-1 to LI-n); a switching unit 3 having a plurality of input ports LI-1 to LI-n and output ports LO-1 to LO-n and switching the input cells from the input ports to any one of the output ports specified by the routing

information" (Column 4, lines 35-40). The examiner further notes that **Nakayama** teaches **"determining whether a particular one of a plurality of output queues contains a number of queue items that meets or exceeds a pre-determined amount"** as "the quantity of stored cells destined for a specified output port exceeds a predetermined threshold value within the switch, the input line interfaces sending the cells destined for the specified output port selectively inhibits the forwarding or sending out of cells according to the order of priority of the cells in response to the notice of congestion informed to each of the input line interfaces from the congestion notifier 4 by way of the signal line 19" (Column 4, lines 54-62). The examiner further notes that **Nakayama** teaches **"in response to a determination that the particular one of the plurality of output queues contains a number of queue items that meets or exceeds the predetermined amount, preventing any queue items that have a same corresponding output port as the particular one of the plurality of output queues and that have a queue item priority greater than or equal to the queue priority of the particular one of the plurality of output queues from exiting the input queue"** as "the quantity of stored cells destined for a specified output port exceeds a predetermined threshold value within the switch, the input line interfaces sending the cells destined for the specified output port selectively inhibits the forwarding or sending out of cells according to the order of priority of the cells in response to the notice of congestion informed to each of the input line interfaces from the congestion notifier 4 by way of the signal line 19" (Column 4, lines 54-62) and "upon reaching a second

threshold Th2, the high priority cells destined for the specified output port are also prohibited from flowing into the switching unit 3" (Column 5, lines 2-5).

Nakayama does not explicitly teach:

E) wherein each of the plurality of queue items has a corresponding queue item priority and a corresponding output port from the one or more output ports; and

F) wherein each of the plurality of output queues at an output port has a corresponding queue priority.

Erimli, however, teaches **"wherein each of the plurality of queue items has a corresponding queue item priority and a corresponding output port from the one or more output ports"** as "The output queues 310 may include priority queues 312-318. The priority queue 312 may store forwarding descriptors for packets of priority 0 (low priority) that await transmission from the corresponding output port. The priority queue 314 may store forwarding descriptors for packets of priority 1 (medium-low priority) that await transmission from the corresponding output port. The priority queue 316 may store forwarding descriptors for packets of priority 2 (medium-high priority) that await transmission from the corresponding output port. The priority queue 318 may store forwarding descriptors for packets of priority 3 (high priority) that await transmission from the corresponding output port" (Column 7, lines 4-16) and **"wherein each of the plurality of output queues at an output port has a corresponding queue priority"** as "The output queues 310 may include priority queues 312-318. The priority queue 312 may store forwarding descriptors for packets of priority 0 (low priority) that await transmission from the corresponding output port. The priority queue 314 may

store forwarding descriptors for packets of priority 1 (medium-low priority) that await transmission from the corresponding output port. The priority queue 316 may store forwarding descriptors for packets of priority 2 (medium-high priority) that await transmission from the corresponding output port. The priority queue 318 may store forwarding descriptors for packets of priority 3 (high priority) that await transmission from the corresponding output port" (Column 7, lines 4-16).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because teaching **Erimli's** would have allowed **Nakayama's** to provide a method to mask certain priorities to prevent other (possibly higher) priorities from being flow controlled, as noted by **Erimli** (Column 1, lines 40-46).

Regarding claim 2, **Nakayama** does not explicitly teach a method comprising:
A) wherein the pre-determined amount is a capacity of the particular one of the plurality of output queues.

Erimli, however, teaches **"wherein the pre-determined amount is a capacity of the particular one of the plurality of output queues"** as "When the number of items of each particular priority in an output queue 310 exceeds the threshold, the output queue 310 generates a threshold signal" (Column 7, lines 26-28)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because teaching **Erimli's** would have allowed **Nakayama's** to provide a method to mask certain priorities

to prevent other (possibly higher) priorities from being flow controlled, as noted by **Erimli** (Column 1, lines 40-46).

Regarding claim 3, **Nakayama** further teaches a method comprising:

A) wherein the queue items are packets in a packet-switching fabric (Column 4, lines 32-50).

The examiner notes that Nakayama teaches **"wherein the queue items are packets in a packet-switching fabric"** as "a packet switch comprises a plurality of input line interfaces 1 (1—1 to t-n) connected to input lines...(LI-1 to LI-n)" (Column 4, lines 32-36).

Regarding claim 4, **Nakayama** further teaches a method comprising:

A) wherein, upon exit of a packet from one of the plurality of output queues, the packet is transmitted over the packet-switching fabric (Column 4, lines 32-50).

The examiner notes that Nakayama teaches **"wherein, upon exit of a packet from one of the plurality of output queues, the packet is transmitted over the packet-switching fabric"** as "a plurality of output line interfaces 2 (2-1 to w-n) each connected to one of the switch output ports to restore the original IP packet from the cells received from the output port and send that IP packet to the output line OUT (OUT-1 to OUT-n) associated therewith" (Column 4, lines 40-45).

Regarding claim 5, **Nakayama** further teaches a method comprising:

A) wherein if any of the plurality of output queues contains a number of queue items that meets or exceeds the pre-determined amount, no queue items are allowed to exit the input queue until all of the plurality of output queues contain numbers of queue items that are less than the pre-determined amount (Column 5, lines 5-11).

The examiner notes that Nakayama teaches **"wherein if any of the plurality of output queues contains a number of queue items that meets or exceeds the pre-determined amount, no queue items are allowed to exit the input queue until all of the plurality of output queues contain numbers of queue items that are less than the pre-determined amount"** as "and once the number of cells stored for the specified output port has sufficiently decreased due to prohibiting the supply of cells to the switching unit, the suppression of the input of cells to the switch unit may be cancelled to once again allow the cells to flow into the switching unit 3 in the order of high priority first" (Column 4, lines 5-11).

Regarding claim 6, **Nakayama** does not explicitly teach a method comprising:
A) wherein the pre-determined amount is a capacity of the particular one of the plurality of output queues.

Erimli, however, teaches **"wherein the pre-determined amount is a capacity of the particular one of the plurality of output queues"** as "When the number of items of each particular priority in an output queue 310 exceeds the threshold, the output queue 310 generates a threshold signal" (Column 7, lines 26-28)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because teaching **Erimli's** would have allowed **Nakayama's** to provide a method to mask certain priorities to prevent other (possibly higher) priorities from being flow controlled, as noted by **Erimli** (Column 1, lines 40-46).

Regarding claim 7, **Nakayama** teaches a computer program product comprising:

A) receiving a plurality of queue items at an input queue (Column 4, lines 51-62, Figure 1);

B) wherein the input queue feeds a plurality of output queues that feed one or more output ports (Column 4, lines 32-40, Figure 1);

C) determining whether a particular one of a plurality of output queues contains a number of queue items that meets or exceeds a pre-determined amount (Column 4, lines 51-67-Column 5, lines 1-11); and

D) in response to a determination that the particular one of the plurality of output queues contains a number of queue items that meets or exceeds the predetermined amount, preventing any queue items that have a same corresponding output port as the particular one of the plurality of output queues and that have a queue item priority greater than or equal to the queue priority of the particular one of the plurality of output queues from exiting the input queue (Column 4, lines 63-67-Column 5, lines 1-11).

The examiner notes that **Nakayama** teaches **"receiving a plurality of queue items at an input queue"** as "a plurality of packets destined for the same output port

are input simultaneously partially over a time base from a plurality of input lines" (Column 4, lines 52-54). The examiner further notes that **Nakayama** teaches **"wherein the input queue feeds a plurality of output queues that feed one or more output ports"** as "sending the cells to switch input ports LI (LI-1 to LI-n); a switching unit 3 having a plurality of input ports LI-1 to LI-n and output ports LO-1 to LO-n and switching the input cells from the input ports to any one of the output ports specified by the routing information" (Column 4, lines 35-40). The examiner further notes that **Nakayama** teaches **"determining whether a particular one of a plurality of output queues contains a number of queue items that meets or exceeds a pre-determined amount"** as "the quantity of stored cells destined for a specified output port exceeds a predetermined threshold value within the switch, the input line interfaces sending the cells destined for the specified output port selectively inhibits the forwarding or sending out of cells according to the order of priority of the cells in response to the notice of congestion informed to each of the input line interfaces from the congestion notifier 4 by way of the signal line 19" (Column 4, lines 54-62). The examiner further notes that **Nakayama** teaches **"in response to a determination that the particular one of the plurality of output queues contains a number of queue items that meets or exceeds the predetermined amount, preventing any queue items that have a same corresponding output port as the particular one of the plurality of output queues and that have a queue item priority greater than or equal to the queue priority of the particular one of the plurality of output queues from exiting the input queue"** as "the quantity of stored cells destined for a specified output port exceeds a

predetermined threshold value within the switch, the input line interfaces sending the cells destined for the specified output port selectively inhibits the forwarding or sending out of cells according to the order of priority of the cells in response to the notice of congestion informed to each of the input line interfaces from the congestion notifier 4 by way of the signal line 19" (Column 4, lines 54-62) and "upon reaching a second threshold Th2, the high priority cells destined for the specified output port are also prohibited from flowing into the switching unit 3" (Column 5, lines 2-5).

Nakayama does not explicitly teach:

E) wherein each of the plurality of queue items has a corresponding queue item priority and a corresponding output port from the one or more output ports; and

F) wherein each of the plurality of output queues at an output port has a corresponding queue priority.

Erimli, however, teaches **"wherein each of the plurality of queue items has a corresponding queue item priority and a corresponding output port from the one or more output ports"** as "The output queues 310 may include priority queues 312-318. The priority queue 312 may store forwarding descriptors for packets of priority 0 (low priority) that await transmission from the corresponding output port. The priority queue 314 may store forwarding descriptors for packets of priority 1 (medium-low priority) that await transmission from the corresponding output port. The priority queue 316 may store forwarding descriptors for packets of priority 2 (medium-high priority) that await transmission from the corresponding output port. The priority queue 318 may store forwarding descriptors for packets of priority 3 (high priority) that await

transmission from the corresponding output port" (Column 7, lines 4-16) and **"wherein each of the plurality of output queues at an output port has a corresponding queue priority"** as "The output queues 310 may include priority queues 312-318. The priority queue 312 may store forwarding descriptors for packets of priority 0 (low priority) that await transmission from the corresponding output port. The priority queue 314 may store forwarding descriptors for packets of priority 1 (medium-low priority) that await transmission from the corresponding output port. The priority queue 316 may store forwarding descriptors for packets of priority 2 (medium-high priority) that await transmission from the corresponding output port. The priority queue 318 may store forwarding descriptors for packets of priority 3 (high priority) that await transmission from the corresponding output port" (Column 7, lines 4-16).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because teaching **Erimli's** would have allowed **Nakayama's** to provide a method to mask certain priorities to prevent other (possibly higher) priorities from being flow controlled, as noted by **Erimli** (Column 1, lines 40-46).

Regarding claim 8, **Nakayama** does not explicitly teach a computer program product comprising:

A) wherein the pre-determined amount is a capacity of the particular one of the plurality of output queues.

Erimli, however, teaches **"wherein the pre-determined amount is a capacity of the particular one of the plurality of output queues"** as "When the number of items of each particular priority in an output queue 310 exceeds the threshold, the output queue 310 generates a threshold signal" (Column 7, lines 26-28)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because teaching **Erimli's** would have allowed **Nakayama's** to provide a method to mask certain priorities to prevent other (possibly higher) priorities from being flow controlled, as noted by **Erimli** (Column 1, lines 40-46).

Regarding claim 9, **Nakayama** further teaches a computer program product comprising:

A) wherein the queue items are packets in a packet-switching fabric (Column 4, lines 32-50).

The examiner notes that Nakayama teaches **"wherein the queue items are packets in a packet-switching fabric"** as "a packet switch comprises a plurality of input line interfaces 1 (1—1 to t-n) connected to input lines...(LI-1 to LI-n)" (Column 4, lines 32-36).

Regarding claim 10, **Nakayama** further teaches a computer program product comprising:

A) wherein, upon exit of a packet from one of the plurality of output queues, the packet is transmitted over the packet-switching fabric (Column 4, lines 32-50).

The examiner notes that Nakayama teaches **"wherein, upon exit of a packet from one of the plurality of output queues, the packet is transmitted over the packet-switching fabric"** as "a plurality of output line interfaces 2 (2-1 to w-n) each connected to one of the switch output ports to restore the original IP packet from the cells received from the output port and send that IP packet to the output line OUT (OUT-1 to OUT-n) associated therewith" (Column 4, lines 40-45).

Regarding claim 11, **Nakayama** further teaches a computer program product comprising:

A) wherein if any of the plurality of output queues contains a number of queue items that meets or exceeds the pre-determined amount, no queue items are allowed to exit the input queue until all of the plurality of output queues contain numbers of queue items that are less than the pre-determined amount (Column 5, lines 5-11).

The examiner notes that Nakayama teaches **"wherein if any of the plurality of output queues contains a number of queue items that meets or exceeds the pre-determined amount, no queue items are allowed to exit the input queue until all of the plurality of output queues contain numbers of queue items that are less than the pre-determined amount"** as "and once the number of cells stored for the specified output port has sufficiently decreased due to prohibiting the supply of cells to the switching unit, the suppression of the input of cells to the switch unit may be cancelled

to once again allow the cells to flow into the switching unit 3 in the order of high priority first" (Column 4, lines 5-11).

Regarding claim 12, **Nakayama** teaches a queuing system comprising:

A) an input queue (Column 4, lines 51-62, Figure 1);

B) a plurality of output queues (Column 4, lines 32-40, Figure 1);

C) wherein each of the plurality of output queues receives queue items from a head of the input queue (Column 4, lines 32-50)

D) wherein if a particular one of the plurality of output queues contains a number of queue items that meets or exceeds a pre-determined amount, no queue items that have a same corresponding output port as the particular one of the plurality of output queues and that have a queue item priority that is greater than or equal to that of the particular one of the plurality of output queues are allowed to exit the input queue until the particular one of the plurality of output queues contains a number of queue items that is less than the pre-determined amount (Column 4, lines 63-67-Column 5, lines 1-11).

The examiner notes that **Nakayama** teaches **"an input queue"** as "a plurality of packets destined for the same output port are input simultaneously partially over a time base from a plurality of input lines" (Column 4, lines 52-54). The examiner further notes that **Nakayama** teaches **"a plurality of output queues"** as "sending the cells to switch input ports LI (LI-1 to LI-n); a switching unit 3 having a plurality of input ports LI-1 to LI-n and output ports LO-1 to LO-n and switching the input cells from the input ports to any one of the output ports specified by the routing information" (Column 4, lines 35-40).

The examiner further notes that **Nakayama** teaches **"wherein each of the plurality of output queues receives queue items from a head of the input queue"** as "specified by the routing information contained in each of the cell headers" (Column 4, lines 39-40). The examiner further notes that **Nakayama** teaches **"wherein if a particular one of the plurality of output queues contains a number of queue items that meets or exceeds a pre-determined amount, no queue items that have a same corresponding output port as the particular one of the plurality of output queues and that have a queue item priority that is greater than or equal to that of the particular one of the plurality of output queues are allowed to exit the input queue until the particular one of the plurality of output queues contains a number of queue items that is less than the pre-determined amount"** as "the quantity of stored cells destined for a specified output port exceeds a predetermined threshold value within the switch, the input line interfaces sending the cells destined for the specified output port selectively inhibits the forwarding or sending out of cells according to the order of priority of the cells in response to the notice of congestion informed to each of the input line interfaces from the congestion notifier 4 by way of the signal line 19" (Column 4, lines 54-62) and "upon reaching a second threshold Th2, the high priority cells destined for the specified output port are also prohibited from flowing into the switching unit 3" (Column 5, lines 2-5).

Nakayama does not explicitly teach:

E) wherein each of the plurality of output queues is associated with a corresponding queue priority and a corresponding output port.

Erimli, however, teaches **"wherein each of the plurality of output queues is associated with a corresponding queue priority and a corresponding output port"** as "The output queues 310 may include priority queues 312-318. The priority queue 312 may store forwarding descriptors for packets of priority 0 (low priority) that await transmission from the corresponding output port. The priority queue 314 may store forwarding descriptors for packets of priority 1 (medium-low priority) that await transmission from the corresponding output port. The priority queue 316 may store forwarding descriptors for packets of priority 2 (medium-high priority) that await transmission from the corresponding output port. The priority queue 318 may store forwarding descriptors for packets of priority 3 (high priority) that await transmission from the corresponding output port" (Column 7, lines 4-16).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because teaching **Erimli's** would have allowed **Nakayama's** to provide a method to mask certain priorities to prevent other (possibly higher) priorities from being flow controlled, as noted by **Erimli** (Column 1, lines 40-46).

Regarding claim 13, **Nakayama** does not explicitly teach a queuing system comprising:

A) wherein the pre-determined amount is a capacity of the particular one of the plurality of output queues.

Erimli, however, teaches **"wherein the pre-determined amount is a capacity of the particular one of the plurality of output queues"** as "When the number of items of each particular priority in an output queue 310 exceeds the threshold, the output queue 310 generates a threshold signal" (Column 7, lines 26-28)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because teaching **Erimli's** would have allowed **Nakayama's** to provide a method to mask certain priorities to prevent other (possibly higher) priorities from being flow controlled, as noted by **Erimli** (Column 1, lines 40-46).

Regarding claim 14, **Nakayama** further teaches a queuing system comprising:
A) wherein the queue items are packets in a packet-switching fabric (Column 4, lines 32-50).

The examiner notes that Nakayama teaches **"wherein the queue items are packets in a packet-switching fabric"** as "a packet switch comprises a plurality of input line interfaces 1 (1—1 to t-n) connected to input lines...(LI-1 to LI-n)" (Column 4, lines 32-36).

Regarding claim 15, **Nakayama** further teaches a queuing system comprising:
A) wherein, upon exit of a packet from one of the plurality of output queues, the packet is transmitted over the packet-switching fabric (Column 4, lines 32-50).

The examiner notes that Nakayama teaches **"wherein, upon exit of a packet from one of the plurality of output queues, the packet is transmitted over the packet-switching fabric"** as "a plurality of output line interfaces 2 (2-1 to w-n) each connected to one of the switch output ports to restore the original IP packet from the cells received from the output port and send that IP packet to the output line OUT (OUT-1 to OUT-n) associated therewith" (Column 4, lines 40-45).

Regarding claim 16, **Nakayama** further teaches a queuing system comprising:
A) wherein if any of the plurality of output queues contains a number of queue items that meets or exceeds the pre-determined amount, no queue items are allowed to exit the input queue until all of the plurality of output queues contain numbers of queue items that are less than the pre-determined amount (Column 5, lines 5-11).

The examiner notes that Nakayama teaches **"wherein if any of the plurality of output queues contains a number of queue items that meets or exceeds the pre-determined amount, no queue items are allowed to exit the input queue until all of the plurality of output queues contain numbers of queue items that are less than the pre-determined amount"** as "and once the number of cells stored for the specified output port has sufficiently decreased due to prohibiting the supply of cells to the switching unit; the suppression of the input of cells to the switch unit may be cancelled to once again allow the cells to flow into the switching unit 3 in the order of high priority first" (Column 4, lines 5-11).

Regarding claim 17, **Nakayama** does not explicitly teach a queuing system comprising:

A) wherein the pre-determined amount is a capacity of the particular one of the plurality of output queues.

Erimli, however, teaches **"wherein the pre-determined amount is a capacity of the particular one of the plurality of output queues"** as "When the number of items of each particular priority in an output queue 310 exceeds the threshold, the output queue 310 generates a threshold signal" (Column 7, lines 26-28)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because teaching **Erimli's** would have allowed **Nakayama's** to provide a method to mask certain priorities to prevent other (possibly higher) priorities from being flow controlled, as noted by **Erimli** (Column 1, lines 40-46).

Regarding claim 19, **Nakayama** does not explicitly teach a queuing system comprising:

A) wherein each of the plurality of output queues receives only those queue items that have a queue item priority that matches the queue priority of that output queue.

Erimli, however, teaches **"wherein each of the plurality of output queues receives only those queue items that have a queue item priority that matches the queue priority of that output queue"** as "The output queues 310 may include priority queues 312-318. The priority queue 312 may store forwarding descriptors for packets

of priority 0 (low priority) that await transmission from the corresponding output port. The priority queue 314 may store forwarding descriptors for packets of priority 1 (medium-low priority) that await transmission from the corresponding output port. The priority queue 316 may store forwarding descriptors for packets of priority 2 (medium-high priority) that await transmission from the corresponding output port. The priority queue 318 may store forwarding descriptors for packets of priority 3 (high priority) that await transmission from the corresponding output port" (Column 7, lines 4-16).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because teaching **Erimli's** would have allowed **Nakayama's** to provide a method to mask certain priorities to prevent other (possibly higher) priorities from being flow controlled, as noted by **Erimli** (Column 1, lines 40-46).

Regarding claim 20, **Nakayama** further teaches a queuing system comprising: A) wherein no queue item may exit one of the plurality of output queues if there is a non-empty higher-priority output queue (Column 5, lines 9-11, Column 6, lines 12-15).

The examiner notes that Nakayama teaches **"wherein no queue item may exit one of the plurality of output queues if there is a non-empty higher-priority output queue"** as "one again allow the cells to flow into the switching unit 3 in the order of high priority" (Column 4, lines 9-11) and "a newly arrived high priority packet IP3 can overtake the previously arrived low priority packet IP2 at the input line interface" (Column 6, lines 13-15).

6. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Nakayama et al.** (U.S. Patent 6,907,001) and in view of **Erimli et al.** (U.S. Patent 6,842,423) as applied to claims 1-17, and 19-20 and further in view of **Wynne et al.** (U.S. Patent 6,959,002).

7. Regarding claim 18, **Nakayama** and **Erimli** do not explicitly teach a queuing system comprising:

A) wherein the queuing system is implemented as a logic circuit.

Wynne, however, teaches **"wherein the queuing system is implemented as a logic circuit"** as "When departure scheduler 46 (FIG. 4) operates in its port shaping mode as selected by input MODE control data to a queue control logic circuit 82" (Column 15, lines 8-10).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because teaching **Wynne's** would have allowed **Nakayama's** and **Erimli's** to provide a hardwired circuit to optionally allocate forwarding bandwidth to flow queues with or without having to shape the forwarding rates of output resources", as noted by **Wynne** (Column 3, lines 51-54).

(10) Response to Argument

A. Claims 1-17, and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Nakayama et al.** (U.S. Patent 6,907,001) and in view of **Erimli et al.** (U.S. Patent 6,842,423).

1. Independent Claims 1, 07, and 12:

Arguments (1):

I) Regarding Independent Claims 1, 07, and 12, Appellant argues that the "independent claims 1, 7, and 12 recite a feature of "in response to a determination that the particular one of the plurality of output queues contains a number of queue items that meets or exceeds the pre-determined amount, preventing any queue items that have a same corresponding output port as the particular one of the plurality of output queues and that have a queue item priority greater than or equal to the queue priority of the particular one of the plurality of output queues from exiting the input queue, which is neither taught nor suggested by the cited references". Specifically, Appellant argues that "Appellants' independent claims recite specific criteria utilized by the claimed invention to select which packets should not exit the input queue, namely that the packets have a priority greater than or equal to the queue priority of their destination output queue. In contrast, Nakayama, even where it teaches suppressing all packets (regardless of priority), applies the opposite criterion, that the priority is less than a particular amount".

However, Columns 4 and 5 of **Nakayama** state that "the quantity of stored cells destined for a specified output port exceeds a predetermined threshold value within the switch, the input line interfaces sending the cells destined for the specified output port selectively inhibits the forwarding or sending out of cells according to the order of priority of the cells in response to the notice of congestion informed to each of the input line interfaces from the congestion notifier 4 by way of the signal line 19" (Column 4,

lines 54-62) and "upon reaching a second threshold Th2, the high priority cells destined for the specified output port are also prohibited from flowing into the switching unit 3" (Column 5, lines 2-5). The examiner further wishes to state that **Nakayama's** method clearly allows for higher priority packets from moving on by blocking them (see "the high priority cells destined for the specified output port are also prohibited from flowing into the switching unit 3"). The examiner further wishes to state that since all of the packets are eventually blocked when reaching a threshold (see "Th2"), then the high priority packets are prevented from moving on. Furthermore, the independent claims merely recite the language of "preventing any queue items that have a same corresponding output port as the particular one of the plurality of output queues and that have a queue item priority greater than or equal to the queue priority of the particular one of the plurality of output queues from exiting the input queue". Because Nakayama blocks high-priority queue items at threshold Th2, the aforementioned limitation is taught.

II) Regarding Independent Claims 01, 07, and 12, Appellant argues that "Testing for whether something is greater than or equal to a particular value (as recited in Appellants' independent claims) is, fundamentally, a different operation than testing for whether something is less than a particular value (as taught by Nakayama)" and "If Appellants claim something that applies a "greater than or equal to" relation and the prior art teaches only something that applies a "less than" relation without teaching or suggesting the use of a "greater than or equal to" test or criterion, then the structure and operation of Appellants' invention and the prior art differ" .

However, the independent claims merely recite "preventing any queue items that have a same corresponding output port as the particular one of the plurality of output queues and that have a queue item priority greater than or equal to the queue priority of the particular one of the plurality of output queues from exiting the input queue". Columns 4 and 5 of **Nakayama** state that "the quantity of stored cells destined for a specified output port exceeds a predetermined threshold value within the switch, the input line interfaces sending the cells destined for the specified output port selectively inhibits the forwarding or sending out of cells according to the order of priority of the cells in response to the notice of congestion informed to each of the input line interfaces from the congestion notifier 4 by way of the signal line 19" (Column 4, lines 54-62) and "upon reaching a second threshold Th2, the high priority cells destined for the specified output port are also prohibited from flowing into the switching unit 3" (Column 5, lines 2-5). Because Nakayama prevents the high priority queue items in addition to the low priority queue items when Th2 is reached, the limitation that high priority queue items are blocked is taught by Nakayama. Moreover, because Nakayama blocks the high priority queues at Th2 (they were not blocked at Th1) the condition of greater than or equal to is met at Th2 because the high priority queue items are blocked in addition to the low priority queue items (i.e. now less than, equal to, and greater than are all met).

Arguments (2):

A) Regarding Independent Claims 1, 07, and 12, Appellant argues that the "Erimli does not teach or suggest the limitation of preventing packets having a priority greater than or equal to the output queue's priority from exiting an input queue".

However, the Examiner does not rely on Erimli to teach the aforementioned limitation. Moreover, as previously discussed, Nakayama teaches the aforementioned limitation.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Mahesh Dwivedi

Patent Examiner

AU 2168

MD

Eddie Le

Appeals Practice Specialist

EDDIE C. LEE
SUPERVISORY PATENT EXAMINER

Tim Vo

Supervisory Patent Examiner

AU 2168

TIM VO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100